

ENVIRONMENTAL CONSEQUENCES



ALTERNATIVE 1: PROPOSED ACTION

IMPACTS ON NATURAL ENVIRONMENT

Soils. When burros are removed from Death Valley National Park, the damage caused by burros to the soil, from compaction, trail formations, and wallowing should begin a slow, probably decades-long, recovery process.

If grazing allotments are phased-out or reduced there would also be a concomitant reduction disturbed soils.

A Saline Valley site management plan that would delineate camping and parking areas, would reduce impacts on soils and would provide a better opportunity for the disturbed soil's recovery.

Vegetation. Vegetation consumption and trampling would diminish with the removal of burros and the removal of cattle if grazing is phased-out or reduced. This would provide more forage for the natural wildlife.

During burro capture operations there could be some localized, short-term disturbance to vegetation from the capture crews and their equipment during the capture operation.

A Saline Valley site management plan that would delineate camping and parking areas, would reduce impacts on vegetation and would provide a better opportunity for the recovery of the areas natural vegetation.

Water. The removal of burros from the park would eliminate their impacts on the park waters. Springs and creeks would no longer be contaminated by burro wallowing, defecation, or urination. Cattle's impacts on the park's waters would also be reduced if grazing is phased-out.

Wildlife. As burros are removed from the park and if cattle grazing is phased-out or reduced, wildlife populations would benefit from less competition for resources. More forage and less interactions at watering sites would be expected to benefit wildlife populations and would increase their numbers.

As natural water sources are restored, wildlife populations would adjust to more natural condition. Studies would be undertaken to determine if guzzlers have contributed to unnaturally high wildlife populations and possible overuse of native vegetation.

Localized populations of wildlife may be disturbed for short periods of time during the burro capture operations. No long-term impacts would on wildlife from these operations would be expected.

IMPACTS ON CULTURAL RESOURCES

Archeological sites, historic properties, cultural landscapes, and ethnographic resources in Death Valley National Park would benefit from the proposed action through an expanded systematic and integrated inventory, research, and preservation program to manage, protect, preserve, and interpret properties listed on, or determined eligible for listing on, the National Register of Historic Places. The program, which would protect the documented values of the properties, would be developed through collaborative partnerships with government agencies and public and private organizations that have cultural resource management or research capabilities/expertise.

The potential for burros and cattle to trample and destroy cultural resources would diminish if this alternative is implemented.

Although increasing public visitation could adversely affect cultural resources by vandalism or inadvertent damage, actions to reduce these impacts, including increased ranger monitoring to detect vandalism and illegal collection, and visitor education programs, would be increased. A site management plan to be prepared for the Saline Valley area would include a program to identify cultural resources and recommend methods to protect and restore them.

Additional mining-related cultural resources important to the historical development of the park could be acquired and protected by stabilization efforts and regular enforcement patrols. Bringing historic resources into public ownership would increase visitor opportunities for enjoyment of these resources.

IMPACTS ON NATIVE AMERICAN INTERESTS

Implementation of the proposed action and a resolution to the land suitability study would provide the Timbisha Shoshone Tribe and the National Park Service with greater opportunities for government-to-government collaboration and cooperation on a wide variety of matters.

There would be significant advantages and improvements to the park by the institution of these measures. Implementation of collaboration and cooperation would improve relations and communications between the National Park Service and the tribe. Both NPS staff and tribal members would be more exposed to each other's perceptions and areas of interest. This process would result in improved understanding of matters of agreement and differences. This would make issues easier to resolve.

Tribal involvement in resource management and visitor interpretation would provide park visitors with a more complete and more appropriate range of perspectives on park prehistory, history, and contemporary life.

IMPACTS ON VISITOR USE AND FACILITIES

Visitor aesthetics would be affected by burro removal and the potential elimination or reduction of grazing and guzzlers. As a result of burro removal, habitat would slowly recover, providing a long-term aesthetic benefit. Some visitors would consider the absence of burros an adverse impact, but others would regard it as a positive impact. If the third stage of the burro removal plan results in the killing of the last few burros, some people would be displeased.

The possible elimination of grazing and guzzlers within the park would eventually affect visitors' aesthetics. People who would find cattle and ranching activities an inappropriate use or guzzlers an inappropriate feature within a unit of the national park system would be pleased if allotments were purchased or guzzlers removed. People who enjoy seeing ranching activities and guzzlers would be less pleased.

The changes proposed for the Saline Valley area, may seem too structured to the Saline Valley Warm Springs advocate groups. They might not enjoy their camping experience as much as they did in the past with the proposed action's changes. However, NPS management in the Saline Valley Warm Springs area could help maintain its qualities by protecting it from random and increasing visitor activities. With the implementation of this alternative, visitors would find a well-maintained campground by the National Park Service and advocate groups, a less disturbed natural desert environment, and a rare desert camping experience — warm spring bathing. Closing the Chicken Strip airstrip would adversely affect the people who visit the area by plane. (There are an estimated at 3–4 flights every week, with less frequent summer flights. David Bybee, pers. comm.).

Backcountry roads would receive minimal maintenance from the National Park Service to prevent road-braiding (widening of a road by people trying to drive on a smoother surface to avoid the road's poor surface condition). This would prevent future destruction to the desert environment and allow the vegetation to recover.

As private land, state land, and mining properties are purchased more public lands would be available for visitor use and less incompatible development activities would occur in the park. Visitors would encounter less active mining operations or mining traffic on park roads.

IMPACTS ON SOCIOECONOMIC ENVIRONMENTS

A separate analysis of socioeconomic conditions in the planning area and the effects of the proposed action was conducted by Dean Runyan Associates under contract to the

NPS. That analysis concluded that no significant effects would occur in the NEMO planning area as a result of the proposed action. There would be some loss of grazing related jobs if allotments were acquired, but the overall effect would be offset by an increase in tourism jobs. See that report for more details.

Acquisition of private lands would remove those properties from county tax rolls. However, the federal government provides payments to the counties in lieu of taxes to compensate them for their loss of taxes. This program is coordinated by the Bureau of Land Management and payments are made annually for entitlement lands and every five years for acquired lands. Payment is computed based on 1% of the amount paid for the property.

IMPACTS ON ADMINISTRATIVE OPERATIONS AND FACILITIES

The cost for initial live capture and adoption of the burros would be high. Using BLM figures (\$1,200/burro) removing a target population of 300 burros would be about \$450,000 including planning costs. This cost is a one-time expense. However, there would be long-term expenses of fencing and capture of burros that migrate into the park from adjacent BLM and military lands.

This would be the most expensive alternative for Saline Valley. Funding would be needed to make campsite improvements, to provide facilities and resource protection measures, to develop site management plans, and for increased maintenance costs.

If the relocation of some park services and employees to an area outside the park occurs, then an expected increase in housing availability and choice in the relocated area should improve employee morale. As park services and employees are relocated, the availability of park housing for the remaining employees would increase. Housing maintenance costs for the park would level off. No housing maintenance cost would be incurred for areas outside the park.

With the proposed relocation of some NPS services outside of the park, increased transportation time and expenses would result for employees needing to work in the park. It is about a one-hour drive to Pahrump and two hours to Lone Pine from Furnace Creek.

There would be an initial administrative workload and cost to acquire properties. However, this workload would diminish over time as nonfederal lands and interests are brought under public ownership. Properties acquired may require the park to undertake restoration or stabilization activities to restore native vegetation and wildlife, or to preserve historic features. Any such activities would be considered in separate detailed plans.

IMPACTS ON LAND OWNERSHIP AND USE

This alternative would probably result in operation changes in the grazing management program. Under NPS management, grazing fees might be increased. The change in grazing management operations with the chance of more grazing limitations and higher grazing fees might influence the future value of the grazing allotments. No new range developments would be allowed under this alternative.

The receiving communities of new NPS offices and employees may see an increase in property values and an increase in demand for community services and utilities.

Impacts on mineral development activities would be the same as the existing management alternative.

CUMULATIVE IMPACTS

The acquisition of grazing allotments on a willing-seller willing-buyer basis and removal of most of burros in Death Valley National Park would contribute to the overall restoration of the desert's vegetation, soils, waters, and wildlife to more natural conditions. There would be less overall development of desert habitat and resources on a regional basis.

This alternative's implementation (and a similar one for Mojave National Preserve) would result in a noticeable reduction in the burro populations within the California Desert area's public lands. The population management levels would be reduced to 334 burros and 252 horses from the Bureau of Land Management's former targeted population (843 burros and 267 horses) for their herd management areas prior to the passage of the California Desert Protection Act of 1994. This would be a reduction in the California desert of 60% of the burro and 6% of the horse populations.

Impacts to burros from the potential loss of habitat and a possible increase in the number of injuries or deaths may result from the increased activities at two sites near the park. These sites are the proposed expansions at the National Training Center at Fort Irwin and the expected expansion of the Briggs Mine. The number of animals impacted at these locations is expected to be small but they would add to the proposed reduction at the National Park Service units.

Throughout the desert, the Bureau of Land Management and the National Park Service are pursuing exchanges of state school sections in parks and wilderness areas. The potential reduction in tax dollars is partially mitigated by payments in lieu of taxes that are paid to the counties for lands acquired by the federal government. Additionally, occupancy and sales taxes have and would continue to grow. The potential for increased visitor use in the region and the consequent dollars spent on food, lodging, transportation and other items have grown significantly over the past 5–8 years. This growth in tourist dollars expended in the area is expected to continue.

The existing withdrawal of some park land from mineral entry over the last twenty years by the Mining in the Parks Act, the Bureau of Land Management for wilderness study areas or other purposes, and by the California Desert Protection Act, has removed some areas of the desert from potential mineral development except for valid existing rights in those areas. Depending on the commodity, small regional price increases could result from increased transportation or development costs in other areas. The price of gold, the primary mineral sought, would not be affected by any actions in the planning area. Any loss of jobs in one sector is expected to be offset by stable and sustainable growth in jobs in the service and tourist industries.

There would be no adverse cumulative impacts on cultural resources under this alternative.

ALTERNATIVE 2: EXISTING MANAGEMENT

IMPACTS ON NATURAL ENVIRONMENT

A significant level of impacts on the natural environment is caused by the presence of burros.

Soils. Soils would continue to be affected to varying degrees by foraging of nonnative burros and cattle and their subsequent trampling, as well as by camping activities. Soil compaction, sheet erosion, and gulying would continue to be caused by burros wallowing and trailing (trails apparently produced by burro). The following quotation documents earlier burro damage on former monument lands and at other units of the national park system:

(P)lant growth was inhibited and erosion accelerated in areas trampled by excessive burro concentrations (Ferrell, 1973). Douglas and Fenn (unpublished data) studied soil compaction in Death Valley by using bulk density sampling and soil penetrometer readings. They found treads of burro trails in Butte Valley (Death Valley National Park) were as heavily compacted as treads of relatively heavily used jeep roads in the same areas and soil type. Compaction extended 6-10 inches below the soil surface. The severity of soil compaction was surprising because soils in Butte Valley are granitic, and thus are relatively coarse and have poor compressibility. Heavily used burro trails on steep slopes in Death Valley and Grand Canyon have contributed to major soil movement and erosion. Carothers (1976) provides a discussion and illustration of burro damage in Grand Canyon along the Colorado River. Compacted trails are almost impervious to penetration by water; precipitation tends to run off compacted soils, leading to erosion. Compacted soils also are resistant to plant colonization. Hundreds of miles of such trails are present in Death Valley National Park and Lake Mead National Recreation Area (Douglas and Hurst 1993).

Cattle also adversely affect the soil. The U.S. Fish and Wildlife Service's April 20, 1994, "Biological Opinion" on the desert tortoise provided the following information of grazing/soil impacts:

It [grazing] also causes soil erosion and compaction, reduced water infiltration rates, and increased runoff (Klemmedson, 1956, Ellison, 1960, Arndt, 1966, and Gifford and Hawkins, 1978), leaving less water available for plant production (Dadkash and Gifford, 1980)...The intensity of damage to soil caused solely by cattle is assumed to be directly proportional to the AUMs (Animal Unit Months) of forage used per pasture (BLM, 1980a).

Surface disturbance from camping would occur from the random use of nondesignated sites. This surface disturbance to soils and vegetation could expand over time. Favorite camping sites in the desert tend to enlarge as people gradually expand their use of the campsites out toward the undisturbed desert over the years.

Vegetation. Vegetation would be affected to varying degrees by the nonnative burros and cattle foraging and their subsequent trampling of the soil and by camping activities. Burro population control would help reduce overgrazing of the native vegetation. On average, burros eat 4.5 kilograms (9.9 lbs.) of dry forage per day (Douglas and Hurst 1994). Normal plant growth patterns and rates would not resume with the presence of burros. Burro overgrazing leads to less plant biomass available for native wildlife, thus a lowering of the habitat's carrying capacity (Woodward 1976).

Numerous studies documenting native vegetation damage from burros exist, and the findings are consistent; that is, burros damage native vegetation (see Douglas and Hurst 1994). However, the results of exclosures studies are not so definitive. Exclosures are fenced areas, that exclude the animals being studied usually for many years to determine the effects those animals have on vegetation and the environment by comparing the protected area to the area outside of the fence. Some investigators noted large differences between the plant volume and diversity inside and outside of these exclosures; and other investigators noted no significant differences. The same parameters were studied but the studies took place at different locations. Seasonal weather or water patterns may account for the differences.

Douglas and Hurst cited Longshore and Douglas's (1988) research results where vegetation recovery was studied following burro removal. They found significant differences in species diversity, but no differences in mean volumes of perennial shrubs inside and outside of a park exclosure. They noted that, where browsing by burros was relatively minor, over a three-year period rapid recovery of shrubs was evident. No recovery of the perennial grasses was noted (in this research area grasses comprised 48% of the burros' diet).

The interim burro population strategy (keeping the herd at the previous BLM level of around 130 burros) would result in periodic disturbance to the desert vegetation from inadvertent trampling of vegetation by the burros and capture crews during the capture operation.

It is known that grazing can change the species composition and densities of vegetation. The following is also from the 1994 FWS "Biological Opinion":

Livestock grazing can result in decreased shrub cover (Webb and Stielstra, 1979) and desirable shrubs (Orodho et. al., 1990). Weedy exotics, such as split grass (*Schismus arabicus*), checker fiddle neck (*Amsinkia intermedia*), filaree (*Erodium cicutarium*), and cheatgrass (*Bromus tectorum*) have benefited from grazing, while perennial bunchgrasses, which are highly palatable grazing forage, have become less abundant (Berry and Nicholson 1984, Kie and Loft 1990).

The restoration of the desert environment and its vegetation would be a slow process. Complete recovery, if it happens, occurs at the very minimum over decades. Again, from the 1994 FWS "Biological Opinion":

After 10 years of cattle exclusion in the Ivanpah Valley, there were no significant differences in annual plant cover, biomass, or density between grazed and ungrazed plots (Avery, et. al., 1992). Volumes of creosote and bursage were greater in the grazed plot as compared to the ungrazed plot, but no differences in total perennial plant cover were detected.

In the above study, differences were also observed in soil compaction, including greater compaction in the grazed area outside of the enclosure. The U.S. Fish and Wildlife Service noted that the above results were complicated by the “limited data on soil and vegetation parameters” before the cattle were excluded and that there had been trespass grazing inside the enclosure. The U.S. Fish and Wildlife Service also stated “Mojave Desert vegetation recovers very slowly from disturbance (Vasek, et al., 1975a and 1975b, Lovich, 1992) and 10 years may not be long enough to detect differences between grazed and ungrazed plots.”

Most woody vegetation would continue to be protected from damage by the ban on firewood collection.

Wildlife. Competition for food, water, and space between bighorn sheep and burros is strongly suspected by many biologists, and overlaps of food and range are known to occur. Researchers have found dietary overlap between burros and bighorns ranging from 20% to 67% (Douglas and Hurst, 1993). Douglas and Hurst cite the following from Norment and Douglas’s 1977 paper:

The desert bighorn and burros live in areas having environmental uncertainty. It seems reasonable to assume desert bighorn are resource limited. Burros may also be resource limited, but because of their generalized food habits, they are less limited by forage resources than bighorn. In deserts of the western states, habitats of both species have continually fluctuating carrying capacities, being highest in spring and lowest in winter. Primary productivity of desert habitats is low, and dependent upon the amount and timing of precipitation. Availability of nutritious forage is thought to be the most limiting resource of these species. Foraging strategies of bighorn sheep have evolved in synchrony with their habitats, whereas feral burros have not evolved with the same resource set.

Studies in 1961 and 1984 showed that the presence of burros at springs had an inhibiting effect on bighorn ewes; bighorn rams appear to be less intimidated. The findings were: “Ewes generally would not drink if 3 or more burros were present at the spring. Rams drank at the springs burros utilized, but a spring not used by burros received much heavier use by ewes than springs used by burros. Burros have the tendency to lounge in groups at water sources, often remaining there for hours, or even entire days” (Douglas and Hurst, 1993). Such inhibiting of bighorns would continue under the no-action alternative.

A 1977 study in the Bandelier National Monument found significant differences in small mammal populations (deer, mice) in areas where burros were present. In the monuments pinyon juniper woodlands a reduction 10–33% of small mammals were found compared to the control areas that were without burros (Guthrie 1977). It is assumed that similar

small mammal population declines have occurred within the park's pinyon juniper woodlands and within other community types that share burro and small mammal populations. Any such declines would continue under the no-action alternative.

The interim burro population strategy (keeping the herd at 334 burros) would require periodic disturbance to the desert wildlife due to noise (helicopters, horses, trucks, wranglers, etc.) and inadvertent trampling of small animals and their habitats from capture crews and their equipment during the capture operation. Larger mammals, such as deer and bighorn, would leave the local area during these activities.

Water. Burros are known to contaminate water sources through defecation and urination, overbrowsing or elimination of aquatic and riparian vegetation, and monopolizing the use of springs or seeps. On average, burros consume 22 liters (5 gallons) of water per day. In comparison, bighorn sheep consume about 3.8 liters (1 gallon) per day (Douglas and Hurst 1995).

The land and vegetation near the troughs and tanks experience heavy, concentrated use by cattle and burros. This use compacts the soil and denudes the vegetation near the troughs and tanks. The effects on the soil and vegetation near the troughs and tanks and at the springs and seeps would continue with the implementation of this alternative.

The park's developed water (wildlife guzzlers, mining, and livestock water developments) might be affecting the park's wildlife populations. This artificially increased amount of water could allow some wildlife populations to grow to levels unobtainable with just the available natural water. The population growth here and possibly at other locations, might be affecting native vegetation. With more animals surviving because of the availability of the artificial water, these larger populations would need more food. The limited amount of water available for plants, the desert plants' slow growth and recovery rates, and the possible increased wildlife populations could have adverse ecological effects, as animals would be eating more than what is being replaced.

The natural resources of the Saline Valley Warm Springs area currently receive limited protection. The Upper Spring is the only one of three large springs that has any significant natural characteristics. In 1997, a fence designed to restrict burro use was providing some protection to this spring. It was noted that inside this fence there was a dense stand of aquatic vegetation and a noticeable population of amphibians and invertebrates. The other springs are concrete-lined and chlorinated. A population of goldfish lives in one small pond.

The native vegetation has been trampled and destroyed because of the lack of designated campsites and vehicle access regulations. There is also an abundance of barren open ground areas. Burros drink from all the springs except the fenced Upper Springs during the summer months. It can be expected that as more visitors discover Saline Valley, adverse effects would steadily increase. The effects on vegetation and wildlife near the springs would continue with the implementation of the no-action alternative.

Roadside camping at nondesignated sites could cause impacts on desert vegetation. Repeated use of each campsite appears to be common. With repeated use, the camp areas could grow.

Growth of administrative functions is limited as any significant additional use of water for the park would be at the expense of the natural resources.

In many areas, there is a significant threat to resources from potential mining activity on valid claims. Mining could result in the loss of some vegetation and wildlife habitat and could affect surface water and night sky. Disturbance of some of the surface soil could create a situation where airborne particulates could adversely affect existing air quality. Habitat for sensitive or listed species could also be jeopardized by development.

IMPACTS ON CULTURAL RESOURCES

Cultural resources are potentially threatened by theft, vandalism, and trampling from burros and cattle. Many cultural resources are located near springs, since ancient peoples used springs. Known and undiscovered cultural resources at these areas might be trampled and destroyed by burros. Visitors camping or driving near isolated and unprotected sites would adversely affect cultural resources. Historic or significant structures could be adversely affected by campers' use of wood from historic structures for fires or by other acts of vandalism. Monitoring by rangers would continue to provide as much protection as possible of archeological sites and ruins.

Historic properties listed on, or determined eligible for listing on, the national register would continue to be afforded stabilization/preservation treatment as funding allowed. However, preservation treatment would focus primarily on key resources in high-use visitor areas. Background studies for rehabilitating and adaptive use of historic structures, such as several buildings at Scotty's Castle and CCC-era buildings at Cow Creek, would continue to be emphasized to ensure their preservation and interpretation of significant historic properties. The National Park Service would continue to cooperate with private owners of historic properties within the park boundaries, such as the Furnace Creek Ranch and Inn and Panamint Springs to preserve and interpret significant resources.

Efforts to educate park visitors concerning significant park cultural resources would continue to be conducted through museum exhibits, waysides, pamphlets, brochures, and publications, as well as the park's interpretive program. Efforts to educate park visitors about the importance of preserving the park's cultural resources would continue to be conducted through signing, museum exhibits in the visitor center, and the park's interpretive program.

The Saline Valley area is one of the most intensively used areas in the new lands added to the park. The impacts from recreational use of the Saline springs on cultural resources are unknown, but believed to be significant. Limited protection measures or programs are in place.

Many of the park's historical resources are a result of mining activity. Any such resources located on patented or unpatented mining claims are potentially threatened by new mining development activities. Those on patented claims are on private lands and are not currently available for interpretation or public enjoyment. The National Park Service is unable to take any preservation or enforcement action to protect historic and archeological features located on private lands against decay and vandalism.

IMPACTS ON NATIVE AMERICAN INTERESTS

Communications on a case-by-case basis works adequately for many projects and programs, however this approach can result in missed opportunities for cooperation and collaboration. It can also lead to misunderstanding. Many areas of the park are considered traditionally important to Native Americans. Contemporary interests by the Timbisha Shoshone Tribe identify a variety of concerns related to culture, tribal government and economic opportunities.

IMPACTS ON VISITOR USE AND FACILITIES

Cattle and ranching activities, guzzlers and stock tanks, and burros could influence visitors' enjoyment and perception of aesthetics in an otherwise natural setting of a unit of the national park system.

All facilities in Saline Valley would be maintained by the people using the springs. Natural resource and visitor protection would be at minimal levels. The no-action alternative would have adverse impacts on occasional visitors because of the lack of basic facilities, lack of emphasis on resource protection, and the lack of an NPS management program typically implemented.

No visitor use surveys have been done at Saline Valley Warm Springs, but an advocate group has made a strong statement that it wants the springs area to remain as it is without any changes or government intervention. However, there have been dramatic changes in the area over the past 15–20 years, or more. This change would continue as the public awareness of the area increases through word-of-mouth, magazines, books, and newspaper articles.

Major changes to the springs have occurred in the last 20 years. These changes include but are not limited to an increase in visitation and overall resource degradation. In the future, visitation is expected to increase with public awareness of the area. Without a plan to manage visitor use and resource protection, visitor enjoyment and the resources would continue to be adversely affected.

Roads would remain in typical desert condition receiving infrequent maintenance from the National Park Service and the public. In some locations, there could be continued

widening of desert roads due to users driving on the shoulders as the roads become unusable. This results in an unsightly scene and large, long-term damage to roadside vegetation.

Some users of the springs would benefit if the Chicken Strip airstrip remains open. Saline Valley is also part of a Military Operations Area (R2508) that permits military aircraft to fly at speeds exceeding 250 knots and altitudes of 200 feet above ground or higher. The presence of military and private aircraft sharing the same airspace presents a chance of a mid-air collision in the Saline Valley area.

Visitors would encounter mining development activities, sometimes in designated wilderness, that may disturb some due to the apparent conflict with the park's conservation purpose. Large mining trucks would share the park roads with visitors, sometimes resulting in conflicts.

IMPACTS ON SOCIOECONOMIC ENVIRONMENTS

Additional information on the socioeconomic environment is provided in a separate analysis entitled "Economic Impact Analysis: Northern and Eastern Mojave Planning Area" by Dean Runyan and Associates. Refer to that report for details on the existing conditions.

IMPACTS ON ADMINISTRATIVE OPERATIONS AND FACILITIES

Maintaining a burro herd size at 334 animals would be the most expensive alternative over the long term. The BLM estimated costs for capturing, transporting, adoption preparation (veterinarian care, feed and board), and adoption is \$1,200 per animals (Dave Sjaastad, BLM, pers. comm.). If the growth rate (estimated between 10-20%) is assumed to be 15%, an average of 51 burros would have to be removed each year to maintain the 334 population, costing about \$61,000 per year, not counting NPS staff time. These costs would be long-term. In late 1997, it appeared that the BLM adoption market might be saturated. The Bureau of Land Management was having a difficult time finding homes for the burros. (For all alternatives the cost of reducing the herd down to the herd management level of 334 is the same. The estimated population in December 1997 was at least 575 burros. Therefore, there would be an additional cost to reach the 334 animal level of at least \$282,000). There are also costs for removing trespass burros that enter the park from adjacent herd management areas.

The grazing fees collected under this alternative would not be sufficient to manage a grazing management program. Additional funding would be needed for staff time and program costs associated with the grazing program.

Administering wilderness access and guzzler maintenance would result in high administrative and operational costs.

The National Park Service would have to make a special designation of the Chicken Strip airstrip under the NPS regulations (36 CFR). The National Park Service would also have to institute safety measures at the Chicken Strip. This could result in costs that are unknown at this time.

The employee housing shortage and lack of housing choices could have adverse impacts on employee morale and employee recruitment. The existing facilities in the park, including employee housing, reduces transportation time and expenses for park employees who would otherwise have to commute 1–2 hours to work.

A large administrative workload for park staff to regulate and monitor nonfederal uses on mining claims would remain. Staff with expertise in mining and environmental impact analysis are required to review mining proposals and prepare required environmental compliance documentation.

IMPACTS ON LAND OWNERSHIP AND USE

Burros use forage and water on unfenced private and state lands within the park. For example, ranchers run gas-driven pumps to fill stock tanks with well water. This water is used freely by burros and wildlife and the ranchers' cattle. The significance of these impacts is unknown.

Under this alternative, the park would continue the present course, which is to regulate nonfederal rights through existing NPS or other regulations. Purchases of nonfederal properties are not actively pursued, but may occur on an opportunity basis from willing sellers, provided funding is available. Donations and exchanges are pursued from willing sellers, and third party acquisitions from willing sellers are encouraged. There would be limited change in private land ownership or use. State school sections in the new lands are actively being exchanged by the Bureau of Land Management pursuant to the CDPA direction. The California Desert Protection Act also provides that the park would make the purchase of base property a priority over other land acquisitions if the permit holder approached the National Park Service as willing sellers.

Approximately 10,500 acres are in private ownership within the park's boundary. Another 41,340 acres of the park are owned by the State of California School Commission. Nonfederal interests in the park that might be acquired include mining claims (there are approximately 338 unpatented and 19 patented mining claim groups totaling 13,444 acres), two grazing permits and 45 outstanding water rights.

Where mineral development proposals do not meet the NPS regulatory approval standards, the park would seek funding to acquire the property or interest. The primary commodities affected in the park would be precious metals (mostly gold), borates and

talc. No economical deposits of rare minerals are known to occur in the park. Gold mines exist elsewhere in the region outside the park, including two very large open pit, cyanide heap leaching operations adjacent the park in Panamint Valley and near Bullfrog. Mines that meet the approval standards may still be approved under this alternative.

CUMULATIVE IMPACTS

Maintaining wild horse and burro herd at the NPS units and BLM land in the NEMO planning area, as well as the concurrent burro management with the Bureau of Land Management's other planning efforts (WMP and NECO), Clark County, NV, the Navy's China Lake, and Inyo and San Bernardino National Forests would increase the number of burros available for adoption, significantly increasing management costs and the problems of finding homes for the burros.

The effects of burro and cattle grazing on the soil, water, flora, and fauna are major and cumulative. Restoration of the California desert is inhibited while these animals remain.

Increases in animal populations (domestic, feral, and native) due to availability of water by fabricated devices might cause regional adverse effects on the desert ecology. These adverse effects are due to these larger populations using more resources, and at a faster rate than can be replaced.

Cumulative impacts on archeological sites, ethnographic resources, and historic properties are difficult to analyze with precision. It is presumed that degradation caused by erosion, casual collection, and deterioration to features is more likely to happen when large groups of people are at an archeological site. The significance and integrity of ethnographic sites are potentially diminished by increasing park visitation. Such sites could become less suitable for ethnographic uses as more people congregate near them. The significance and integrity of historic properties and cultural landscapes are also potentially subjected to inadvertent damage and site degradation by increasing park visitation.

Growth of administrative facilities is limited due to availability of water and with natural resources receiving priority of use

There are believed to be only a few warm springs in the California desert that have native flora and fauna intact. This condition would not be improved under this alternative.

Development of mining claims and state lands in the park could contribute to overall loss of desert resources and habitat for native species in the region. Potential road closures by claimants during active mining could result in a small additional decrease in overall public access.

The existing withdrawal of some park land from mineral entry over the last twenty years by the Mining in the Parks Act, the Bureau of Land Management for wilderness study areas or other purposes, and by the California Desert Protection Act, has removed some

areas of the desert from potential mineral development, except for valid existing rights. Depending on the commodity, small regional price increases could occur from increased transportation or development costs in other areas if properties are denied operating permits due to regulatory standards and are purchased. The price of gold, the primary mineral sought, would not be affected by any actions in the planning area. Any loss of jobs in one sector is expected to be offset by stable and sustainable growth in jobs in the service/tourist industry.

ALTERNATIVE 3: OPTIONAL MANAGEMENT

IMPACTS ON NATURAL ENVIRONMENT

The desert environment would not be restored at and near the Chicken Strip airstrip. An additional option for this alternative is to reopen the Tail-Dragger Strip by leveling the landing strip. The desert vegetation and habitats in this area would be eliminated.

Designating campsites at Saline Warm Springs would result in less damage to the landscape and would benefit the desert environment. Much of the existing barren area would be given an opportunity to recover. Vehicle presence within the campground area and the freedom to drive anywhere would result in continual damage and destruction of vegetation.

IMPACTS ON CULTURAL RESOURCES

Allowing roadside camping under this alternative could result in adverse impacts on archeological and ethnographic resources and cultural landscapes along the Eureka-Saline wilderness road corridor.

IMPACTS ON VISITOR USE AND FACILITIES

Impacts on visitor use and facilities would be the same as the proposed action, but the Chicken Strip airstrip would remain open and the Tail Dragger airstrip would be evaluated for reopening. Saline Valley is part of a Military Operations Area (R2508) that permits aircraft to fly at speeds exceeding 250 knots and altitudes of 200 feet above ground or higher. The presence of military and private aircraft sharing the same airspace increases the chance of a mid-air collision. Some visitors solitude and enjoyment would be diminished by the presence of aircraft in a remote wilderness setting. However, private aircraft are a minor component of the aircraft noise in Saline Valley.

A few visitors may be deprived of free camping space if the Emigrant campground, which provides 10 camping sites, were closed because of potential flood hazards.

The potential phasing-out of the concession operations at Stovepipe Wells over the next 20–30 years would cause adverse effects for visitors as lodging units are reduced to zero. This action would eliminate an alternative to the higher-priced, and privately-owned Furnace Creek Ranch and Inn. This would exclude some people from staying in the park and would cause them to drive further each day to visit the park during their visit.

IMPACTS ON SOCIOECONOMIC ENVIRONMENTS

A separate analysis of the socioeconomic conditions in the planning area and the effects of the proposed action was conducted by Dean Runyan and Associates under contract to the National Park Service. Refer to their report, entitled “Economic Impact Analysis: Northern and Eastern Mojave Planning Area” for details.

IMPACTS ON ADMINISTRATIVE OPERATIONS AND FACILITIES

The National Park Service would seek a special designation of the Chicken Strip and/or the Tail Dragger airstrips under the NPS regulations (36 CFR). The National Park Service would also have to institute safety measures at the Chicken Strip and/or the Tail Dragger airstrips. Administration and maintenance workload and costs would increase.

Minor costs would accrue for administering wilderness access and guzzler maintenance.

IMPACTS ON LAND OWNERSHIP AND USE

Private land or interests would only be acquired in sensitive resource areas from willing sellers, or if a development project would adversely affect park resources. Exchange of state school sections would continue.

Impacts on mineral development would be similar to the existing management alternative, except that increased acquisition of mineral rights may occur as a result of the sensitive resource analysis and the identification of areas where mineral development would be incompatible with the park mission. This increase is not quantifiable at this time, however a separate impact analysis would be performed at the time the sensitive resource analysis occurs. Overall effects on regional mineral development would be minor.

CUMULATIVE IMPACTS

Same impacts as the Alternative 1 (proposed action).

OTHER COMPLIANCE REQUIREMENTS

The following is a list of mandatory topics that must be covered in a National Park Service environmental impact statement. Where relevant, additional information on these topics is covered in the proposed action and alternatives section of this draft plan.

Energy requirements and conservation potential

Energy conservation is a major design factor in any construction activity proposed in this document.

Natural or depletable resource requirements and conservation potential

The actions proposed in this draft document promote the conservation of the park's resources and the enjoyment of these resources by the public.

Urban quality, historic and cultural resources, and design of the built environment

Before work on any of the park's historic structures can begin, the resources would be evaluated for their historical significance following historic preservation laws. This evaluation would be used in guiding the design for any future construction work.

Environmental Justice EO 12898 (Socially or economically disadvantaged populations)

Any socially or economically disadvantaged population within the park would not be adversely impacted by any of the alternatives presented in this document.

Wetlands and floodplains

Spring restorations is part of the proposed action. There are no proposed actions that would adversely affect wetlands. No development within floodplains is planned.

Prime and unique agricultural lands

There are no prime, commercial agricultural lands within the park. The date palm oasis at Furnace Creek is on private land and would not be impacted by any action proposed in this document.

Endangered or threatened plants and animals and their habitats

The park's sensitive species, including federally listed and state listed endangered or threatened species have been identified. A plan is presently being developed to provide management recommendations for the sensitive plants of the Eureka Dunes area. Other

sensitive species would not be adversely impacted by the proposed action. Future development activities would consider their impact on sensitive species.

Important scientific, archeological and other cultural resources including historic properties listed or eligible for the National Register of Historic Places

These features are described within this draft environmental impact statement in the affected environment, alternatives including proposed action and the environmental consequences sections.

Ecologically critical areas, wild and scenic rivers, or other unique natural resources

Ecologically critical areas within the park include the Devils Hole, Darwin Falls, Cottonball Marsh, Amargosa River system, Salt Springs, Salt Creek, Saratoga Springs, and Eureka Dunes. These areas would be protected with the proposed action presented within this draft environmental impact statement.

Death Valley National Park carries out the NPS responsibilities for the National Natural Landmark (NNL) program associated with five areas: Trona Pinnacles, Deep Springs, Timber Mountain Caldera, Fish Slough area of critical environmental concern and Eureka Dunes. Each of these designated areas are nationally significant natural resources warranting the highest level of protection and preservation from degradation of the characteristics that qualified them for designation as national natural landmarks. The national natural landmark program activities include annual inspection and reporting on their condition of the landmarks or threats to them and developing and maintaining partnerships with federal, state or other owners of the national natural landmark to promote their continued preservation and protection.

Public health and safety

Public health and safety issues are addressed within this draft Environmental Impact Statement. The proposed actions call for additional public access on information regarding public health and safety.

Sacred sites/Native American Trust resources

Sacred sites and Native American Trust resources would be protected through consultations and the development of agreements with the affected tribes on the protection of these sites and resources.

SUSTAINABLE AND LONG-TERM MANAGEMENT

The National Park Service has a responsibility to sustain the land within its jurisdictional boundaries as a thriving ecosystem while preserving cultural resources and sustaining the quality of the human experiences that can be had on the land. Ecosystems do not recognize political boundaries; this fact may require the National Park Service to act upon external influences that could influence elements within the political boundary. The National Park Service is challenged to support the economic viability of the communities within and surrounding the park while achieving environmental and cultural resource protection. The concept of sustainability recognizes that our world is dynamic, that change will continue to occur, and that the interrelationship between human beings and the environment must be considered in making decisions. Sustainability is a continual process, a way of thinking about now and the future, not a static set of characteristics that may be defined.

The National Park Service would apply the principles of sustainability to the management of all applicable aspects of this unit of the national park system from interpretation to development and management of facilities. Guiding principles include the efficient use of local resources such as water, energy, and materials to reduce waste, environmental impacts and management costs, and sustaining the quality of the visitor experience and life for local residents by maintaining scenic beauty, environmental quality, and visual harmony within the built environment and its surroundings. The National Park Service would also work with local communities to encourage economic activities that protect and improve the quality of the environment.

The relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity

Implementation of the proposal would result in minor, short-term disruptions to some visitor services, some historic features, and a small part of the natural environment during construction and the roundup, moving, and adoption of burros. Over the long term, the proposed action would result in the elimination of burros, potential reductions in cattle grazing, and restoration of natural vegetation and water. To a slightly lesser extent, the optional alternative would allow the natural habitat to recover. Over the long term, the no-action alternative would not allow the natural habitat to recover as completely.

Any irreversible or irretrievable commitments of resources

All alternatives would have long term and possibly some minor irreversible and irretrievable impacts from small construction activities at the existing campground locations. These sites would not exceed 3 to 25 acres of habitat within the park. For all alternatives, any mining activity within the park would permanently damage the natural environment. The extent of the damage would be mitigated, but some damage would still be present. Energy and water conservation would be considered with all park-related design and construction activities.

Future facility planning and management would also be directed by the National Park Service's *Guiding Principles for Sustainable Design* published in 1993 by the Government Printing Office. Sustainable actions could include reducing waste and water and energy consumption and improving or maintaining the quality of human experiences while reducing or eliminating impacts on the natural environment. Facilities must relate to the qualities of the surrounding landscape, local or regional architectural themes, providing a special sense of place. Continued operation of facilities would also be managed under sustainable principles such as high visitor satisfaction, easier maintenance, lowering operational costs, reducing waste, and reducing water and energy consumption.

Any adverse impacts that cannot be avoided should the action be implemented

Between 3 and 50 acres of land in the park would be lost to developments for visitor and maintenance use. If mining proceeded, those impacts would also be unavoidable.